Received: 3 June 2019 | Accepted: 7 July 2019

DOI: 10.1111/iwj.13169

IWJ WILEY

LETTER TO THE EDITOR

Koebner phenomenon of hidradenitis suppurativa on a surgical scar

Dear Editors,

We report a recent case of a patient affected by hidradenitis suppurativa (HS) whose disease recurred on a surgical scar.

A 67-year-old overweight (body mass index: 39) male with a 2-year history of HS (stage III Hurley) complained of two small nodules that recently appeared on his right thigh. The patient was a smoker for 30 years (>10 cigarettes a day), suffering from metabolic syndrome, atrial fibrillation, obstructive pulmonary disease, and chronic renal failure. HS medical history showed repeated unsuccessful courses of oral antibiotics and adalimumab that was started 18 months before our observation. Six weeks before the patient presented to us, he underwent, upon temporary discontinuation of adalimumab for 2 weeks, a wide surgical excision followed by a direct primary suture of an HS painful deep-seated plaque (9 cm × 4 cm) located on the right inner thigh. Reason for surgery was discomfort during deambulation because of chronic friction of the oedematous scrotum with the inner thighs (Figure 1A). Histopathology confirmed the diagnosis of HS, showing multiple cysts with signs of chronic inflammation and suppuration. Surgical margins were free (Figure 1B).

On physical evaluation, the patient showed the presence of two inflamed and draining erythematous nodules, 1.5 and 2 cm in diameter, localised to the site of the surgical suture (Figure 1C). On ultrasound evaluation using a high-frequency device (MyLab Touch, Esaote SpA, Genova, Italy, 15-18 MHz), the nodules showed the presence of fluid collections, a finding typical of HS.

In our case, HS lesions followed the scarring process and appeared right on the surgical scar, configuring the Koebner phenomenon (KP), which, by definition, indicates the onset of new lesions at the site of skin injury in patients with pre-existing dermatoses. Four categories of KP are described: I = true koebnerisation, II = pseudo-koebnerisation,

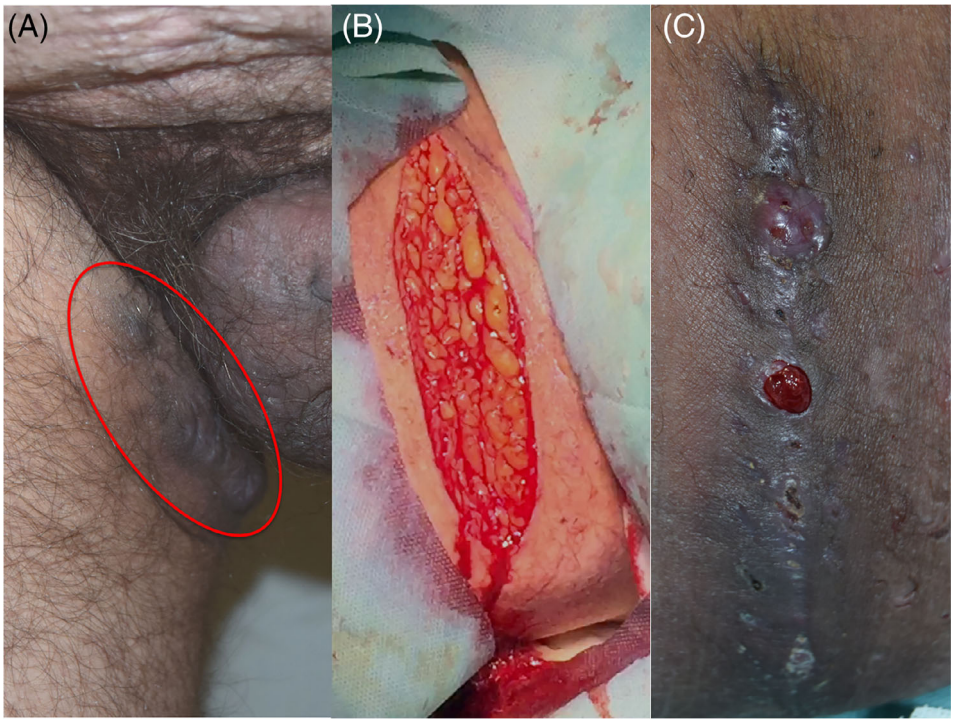

FIGURE 1 A, Hidradenitis suppurativa deep-seated plaque (9 cm × 4 cm) surrounded by fibrotic skin located on the right inner thigh. B, Intraoperative image showing complete removal. C, Presence of two inflamed and draining erythematous nodules, ranging from 1.5 to 2 cm in diameter, localised on the surgical scar

III = occasional lesions, and IV = poor or questionable trauma-induced processes.[1] Although the exact pathogenesis of KP has not yet been established, various types of trauma have been reported, including pressure; burns; tattooing; venipuncture; arthropod stings; radiation; and various surgical procedures, such as chemical peels, cold-steel or laser surgery, skin grafts, and biopsy.[2] KP following surgical procedures has been reported in vesicular-bullous disorders, Kaposi's sarcoma, psoriasis, necrobiosis lipoidica, lichen sclerosus and atrophicus, angiosarcoma, granuloma anulare, Darier's disease, condyloma acuminatum, sarcoidosis, pyoderma gangrenosum, and vitiligo.[2-4] KP in HS has not been described on surgical scars but has been observed in 14 obese patients in whom HS lesions developed on the abdomen as a result of mechanical stress.[5] Other cases of HS that followed mechanical stress, friction, pressure, and radiotherapy have been reported but have not specifically defined as KP.[6-11] Of note, a "frictional furuncle subtype" is considered in a recent HS classification.[12]

We believe that the epidermal injury following surgery may have induced acroinfudibulum damage, resulting in the development of new HS lesions on the surgical scar through the release of pro-inflammatory cytokines.[6] Additional trigger factors to be considered in our case include: the localisation to the inner thigh that represents a predisposed area because of repeated pressure or skin-to-skin contacts[13] and the presence of obesity, which is a significant activity-stimulating and pro-inflammatory condition.[14,15]

In conclusion, the evidence of HS koebnerising on a surgical scar indicates a possible relationship between surgical trauma and HS, suggesting that the occurrence of KP may be seen in HS patients and that HS may be included among those "diseases that may occasionally present as KP after trauma or surgery."[1] Patients undergoing surgical removal of HS lesions should be informed of the possible, although rare, recurrence of the disease on the surgical scar.

CONFLICT OF INTEREST

All the authors have no conflicts of interest to declare, except for Dr Musumeci Maria Letizia who has received fees/honoraria from Celgene, Novartis, Eli Lilly, Janssen-Cilag, Biogen, and AbbVie.

AUTHOR CONTRIBUTIONS

All the authors have substantially contributed to the conception or design of the work or the acquisition, analysis, or interpretation of data for the work; drafting the work or revising it critically for important intellectual content; and final approval of the version to be published; all authors agreement to be accountable for all aspects of the work in ensuring that the questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Maria Letizia Musumeci
Alessandra Pavone
Sebastiano Barresi
Alessandra Scilletta
Giuseppe Micali

Dermatology Clinic, University of Catania, Catania, Italy

Correspondence
Giuseppe Micali, MD, Dermatology Clinic, University of Catania, Via S. Sofia 78, Catania 95123, Italy.
Email: cldermct@gmail.com

REFERENCES

1. Weiss G, Shemer A, Trau H. The Koebner phenomenon: review of the literature. *J Eur Acad Dermatol Venereol*. 2002;16:241-248.
2. Rotunda AM, Bhupathy AR, Dye R, Soriano TT. Pemphigus foliaceus masquerading as postoperative wound infection: report of a case and review of the Koebner and related phenomenon following surgical procedures. *Dermatol Surg*. 2005;31:226-231.
3. Micali G, Gasparri O, Nasca MR, Sapuppo A. Kaposi's sarcoma occurring de novo in the surgical scar in a heart transplant recipient. *J Am Acad Dermatol*. 1992;27(2 pt 1):273-274.
4. Eun SH, Lee JH, Kim GM, Kim KH, Bae JM. Vitiligo at a keloid scar: a possible case of Koebner phenomenon. *J Dermatol*. 2019;46: e28-e29.
5. Boer J. Should hidradenitis suppurativa be included in dermatoses showing koebnerization? Is it friction or fiction? *Dermatology*. 2017;233:47-52.
6. Boer J, Nazary M, Riis PT. The role of mechanical stress in hidradenitis suppurativa. *Dermatol Clin*. 2016;34:37-43.
7. Boer J, Mihajlovic D. Boils at frictional locations in a patient with hidradenitis suppurativa. *Acta Dermatovenerol Croat*. 2016;24: 303-304.
8. Maher M, Larsen L. A case of radiation-induced localized exacerbation of hidradenitis suppurativa. *JAAD Case Rep*. 2016;2: 44-46.
9. de Winter K, van der Zee HH, Prens EP. Is mechanical stress an important pathogenic factor in hidradenitis suppurativa? *Exp Dermatol*. 2012;21:176-177.
10. De Vita V, Fabbrocini G. Mechanical stress as a cause of hidradenitis suppurativa: a lesson from a patient with a monster hernia. *Acta Dermatovenerol Croat*. 2018;26:260-261.
11. Dufour DN, Bryld LE, Jemec GB. Hidradenitis suppurativa complicating naevus comedonicus: the possible influence of mechanical stress on the development of hidradenitis suppurativa. *Dermatology*. 2010;220:323-325.
12. van der Zee HH, Jemec GB. New insights into the diagnosis of hidradenitis suppurativa: clinical presentations and phenotypes. *J Am Acad Dermatol*. 2015;73(5 Suppl. 1):S23-S26.

13. Musumeci ML, Capuzzo G, Cammisuli B, Pesce A, Micali G. Intergluteal contour deformity in hidradenitis suppurativa. *Acta Derm Venereol*. 2019;99:109-110.
14. Micali G. *Hidradenitis Suppurativa: A Diagnostic Atlas*. Hoboken, NJ: Wiley Blackwell; 2017.
15. Frew JW. Commentary: hidradenitis suppurativa: a systematic review integrating inflammatory pathways into a cohesive pathogenic model. *Front Immunol*. 2019;10:302.